

THE macdonald JOURNAL

APRIL 1978



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Editor: Martin van Lierop,
Agronomist
Managing Editor: Hazel M. Clarke
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Jim Feeny
Macdonald Reports
Tom Pickup
J. B. Roy, Agronomist,
Information Division,
Ministry of Agriculture of Quebec
Business Manager:
Martin van Lierop

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Cover: Good sport, good sportsmanship, good coach (in circle) equals the Macdonald Woodsmen. See page 11.

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Journal Jottings

Now most of our readers will have read reports and formed opinions on the Food Strategy Conference which was held in Ottawa in late February. And there will be even further reports and more opinions on the subject in the months to come. Two members of the Macdonald staff were at the Conference which was organized in the form of six workshops: Dr. Lewis A. Fischer of the Department of Agricultural Economics and Dr. F. A. Farmer of the School of Food Science. Dr. Fischer, who had prepared a Brief for the Conference (it appears in this issue), represented the Faculty and Dr. Farmer was there as chairman of the nutrition committee of the Canadian Dietetic Association. I thought that Dr. Farmer's brief summation of the Conference in this space would complement the Brief which begins on page 5.

1. Income stabilization and support for efficient farmers is needed with the cost of improved productivity shared by all Canadians.

2. Trade policy should safeguard a diversified food industry in Canada so that consumers have access to nutritious, reasonably priced foods on a continuing basis.

3. The Research, Information and Education Workshop emphasized the need for continued research into all aspects of the food system and for a common understanding of the educational needs of all segments of the population.

4. The workshop on Marketing and Food Aid stressed the need for dissemination of information now available in a more useful and understandable form.

5. The workshop on Processing,

Distribution and Retailing expressed the concern of all participants at the Conference with regard to nutrition, continuing consultation, and the integral balance of the total food system.

6. Consumers voiced their concerns in the areas of consumer information, market supervisory agencies, nutrition and food safety. Generally such concerns were echoed by other workshops.

Dr. Farmer feels that the Conference has created a better understanding of the importance and complexity of the task that lies ahead, but its success will be measured by its impact on the Canadian agriculture and food industry.

We hope it measures well.

Hazel M. Clarke

Professor Gerald Owen Henneberry

Macdonald College has lost one of its most devoted members through the untimely death of Professor Gerald Owen Henneberry on March 8, 1978. Professor Henneberry had experienced a heart attack in January 1976 but he made a good recovery and resumed his full teaching load. In February 1978, however, he suffered a recurrence of his cardiac trouble which proved fatal.

Professor Henneberry was born in Halifax, N.S., on February 7, 1919 and he remained a staunch son of the Maritimes throughout his life. His undergraduate studies at Dalhousie University were interrupted by service with the Canadian Army as Instructor in Gas Warfare over the years 1943-46. In 1946 he resumed civilian life, graduated B.Sc. (Dalhousie) and entered the Department of Agricultural Chemistry at Macdonald College as a graduate student. He was to be an active member of that Department for the rest of his life. He was appointed lecturer in Agricultural Chemistry in 1951, assistant professor in 1961, and associate professor in 1970.

In 1949 Professor Henneberry graduated M.Sc. (McGill) and then became increasingly active as a demonstrator in charge of laboratory classes. In 1951 he became responsible for the first year course in chemistry and he discharged that responsibility with conspicuous success until this teaching work was transferred to the CEGEP system in 1971. In 1955 he took over the first half-year of the Department's teaching in analytical chemistry and in 1963 he assumed responsibility for

second half-year as well. In addition to this heavy load, he for many years delivered a chemistry course for students in the Diploma course. Although he was never engaged in formal instruction of graduate students, every graduate student who passed through the Department in his time had reason to be grateful for his advice and active help on a wide variety of problems. His knowledge and expertise in laboratory arts and techniques were encyclopedic, and were frequently called upon by his colleagues. His active participation in numerous research projects is attested by the titles of 19 scientific papers of which he was a co-author. In addition he bore his full share of administrative assignments and for a time he was Chairman of the Admissions Committee of the Faculty.

But teaching was Professor Henneberry's primary and consuming interest, and to his teaching he gave of himself unsparingly. Students may at times have thought him somewhat exacting and brusque in his manner, but in the end they came to recognize that they had had a singularly devoted and warm-hearted teacher who was deeply concerned for their best interests. In earlier years Professor Henneberry was a keen hunter and a not inconsiderable marksman, and older graduates will recall his interest in the Rifle Club. Many of his

associates knew and appreciated his continued artistic interests and abilities.

It is difficult for those who knew Professor Henneberry as a colleague and friend to offer an estimate of his character and personality. It is difficult because of the closeness with which his life and work were intertwined with the lives and work of his colleagues and friends. His unconscious unselfishness of attitude and his loyalty to his colleagues, to his Faculty, to Macdonald College, and to the University are unforgettable. We mourn his passing.

Our deepest sympathy goes out to his widow, Professor Celia Henneberry (née Ferguson), to his sister, Miss Audrey Henneberry and to his other relatives in their bereavement.

R. H. Common.

Look Out for the Gypsy

by R. K. Stewart and F. Madrid,
Department of Entomology.

No! Don't look for flashing eyes and swirling skirts! Instead look out for defoliated hardwood trees that may be so bare as to resemble their winter state. The culprit is the Gypsy Moth, *Porthetria dispar*, which is becoming all too prevalent in Quebec.

This insect is yet another example of the danger of introducing, either deliberately or accidentally, a species into a new environment. Although the Gypsy Moth is found in temperate parts of the world from North Africa right through Europe and Asia, it is a relative newcomer to North America. It was brought over from France around 1868, by an entomologist working in Massachusetts, and accidentally released. From this beachhead the Gypsy has invaded large parts of the United States, first going north and east in New England, but also finding its way west through New York and Pennsylvania and occasionally into Michigan and Ohio. It has also reached as far south as Delaware and Maryland, but the trend has been for it to go north and east initially as prevailing winds disperse the young caterpillars considerable distances. These are specially adapted for wind dispersal in that they hang from silk threads in the tree crowns until blown away to parachute into a new area. The Gypsy Moth did not reach Canada until the mid-1920s when it was found in Stanstead County in Quebec as well as in New Brunswick. At that time and until 1965 efforts to prevent establishment here were successful, but in 1965 the invader prevailed and established permanent populations in southern Quebec.

Since that time the moth has spread over a wide area of Quebec, and the Plant Protection Division of Agriculture Canada in Montreal



In 1977 extensive damage was caused by Gypsy Moths in the Mont St. Hilaire area.

and le Centre de Recherches forestières des Laurentides de Ste-Foy have demonstrated their presence as far north as Quebec County and west to Papineau. As yet infestation levels are light in most areas, but the potential for severe infestation is there as shown by continuing problems in Chateaugay and Huntingdon, and Photo 1 shows part of damage in 1977 to Mont Ste. Hilaire.

The Gypsy Moth strips the leaves from a wide range of trees, preferring hardwoods, but also is capable of attacking conifers, and continued severe defoliation can kill the trees as well as weaken them to the point of promoting other mutating factors such as fungi. We worked at a campground in Ste. Antoine Abbé where the caterpillars were so numerous in the trees that their droppings were a considerable discomfort to the campers. Still its an ill wind that blows no good! We are told that there is considerable recreational value in squashing caterpillars!

Although damage may be spectacular the adult moths and larvae are quite unimpressive

looking creatures (Photos 2 & 3). The male is dull brown and just under an inch in length, whereas the female is somewhat larger and mostly white. She does not fly and attracts the male by a powerful sex attractant. They are around during August and early September and, at that time, the females can frequently be seen laying their egg masses which are characteristically covered in a fuzz of gold hair. These eggs are laid on a wide variety of objects including parked recreational vehicles, which allows for efficient dissemination of the insect into new areas. Our research has shown that these eggs are very well able to withstand Quebec winter conditions, and they then give rise to caterpillars in the spring which go about their business of dispersing and feeding. The caterpillars are quite hairy and are mainly dark with changing "trim colours" as they mature. They are probably best recognized in the later stages of larval development by their characteristic behaviour of climbing down the trees during the day to resting places on the trunks and lower branches.

Attempts to control the Gypsy Moth in North America have been the subject of considerable controversy, to put it mildly. The U.S. Department of Agriculture has had a multi-million dollar program underway for some time investigating the efficiency of management techniques, biological controls, toxicants, and the integration of these. The emphasis on control has shifted away from the use of persistent pesticides such as DDT, thus removing some of the controversy. However, many questions can be raised such as cost benefit balance. Certainly in many cases the Gypsy Moth is more of a nuisance than an economic threat to woodlands, and outbreaks tend to be discontinuous both in space and time. We still tend to play the crisis game in that we have to wait for an outbreak before we can justify a reasonable research input. By then, of course, the pressure is on to find the short-term solution.

In Europe and Asia, the Gypsy Moth is exposed to a full range of natural enemies and, although subject to periodic outbreaks, it appears to cause far less permanent damage than in North America. This knowledge has stimulated interest in North American workers, including ourselves, in the possibility of augmenting and promoting natural enemies, such as parasites. Canadian releases of parasites actually began before the Gypsy Moth was recorded here in that parasites of another moth which also attack Gypsy Moth were released in 1912 and later. We have been investigating the current parasite situation in Quebec and have established that local populations are attacked by parasitic wasps and flies. The situation should not be oversimplified, however, as these parasites themselves are often made less efficient as possible control



Male moth.



Female moth.



This photo shows a Gypsy Moth larva, which has been parasitised by a Tachinid fly, and the fly maggot inside the caterpillar is being hyperparasitised by a parasitic wasp.

agents by themselves being heavily parasitised. Photo 4 shows a Gypsy Moth larva, which has been parasitised by a Tachinid fly, and the fly maggot inside the caterpillar is being hyperparasitised by a parasitic wasp, *Brachimeria* sp.

Last summer we did cooperate with Luc Jobin and André Caron of the L.F.R.C. and Agriculture Canada who were field testing a relatively new material for Gypsy Moth control. Dimilin interferes with the caterpillar's ability to form

cuticle or skin when moulting. It killed a very high proportion of the caterpillars and as far as we could determine did not interfere with honeybees or ants in the area. However, parasites were affected and possibly Ladybird predators also. We feel that more knowledge is still required here.

In conclusion the Gypsy Moth is now firmly established in Quebec and likely to show up in considerable numbers in some areas. So look out for the Gypsy!

A BRIEF

presented to the

NATIONAL FOOD STRATEGY CONFERENCE

by Dr. Lewis A. Fischer,
Department of Agricultural
Economics

(Dr. Fischer represented Macdonald College at the National Food Strategy Conference, which was held in Ottawa on February 22 and 23, 1978.)

Introduction

Over the past three decades the Canadian food processing, distributing, and retailing industry (PDR), interposed between farmers and consumers, has been subjected to a variety of pressures making for continuing change in structure and grouping of organizations. Technical innovations such as television, home freezers, etc., have stimulated the expansion of supermarkets and encouraged the concentration of the industry. Societal changes have generated substantial shifts in consumers' preferences. These and similar pressures have transformed the demand for food. On the supply side, larger and more specialized farms, genetic improvements in both crops (corn) and animals (poultry), and more attention to marketing have transformed the farm industry. Because of these changes it has been generally recognized that there is need for and a trend toward an integrated, co-ordinated agriculture and food system. We predict that by the year 2000 or so Canadian agriculture will be a fully integrated, organic element of the national food system.¹ Competition is forcing farmers to increase productivity, which in most cases is identical with output expansion. Moreover, its dependence on exports ties the farm industry to the international market, directly affecting the farmer's profit and stability.

1. That does not preclude the growth of organic farms. These farms will maintain, however, a direct producer-consumer communication, and — in these areas — PDR will remain practically non-existent. Another exception is the specialized grain growers in the Prairies. They are likely to intensify their close relationship with the Canadian Wheat Board and form an organization ruling production, storage, transportation, and international trade of grains.

Finally, the conflict of national, regional, and community goals hinders the efficient allocation of resources at all levels of the food system.

Against the background outlined above we will review both the structures and the goals of the individual components of the system. The analysis will justify our submission concerning a national food policy. Special attention will be paid to the role institutions such as Macdonald College could play in the development of this policy.

It should be noted that the Federal Government's paper on food strategy released June 1977 met with a rather cool reception. Farmers wanted strict proposals to resolve their problems, while the PDR was suspicious of increasing governmental intervention. Consumers were dissatisfied because their claim for effective participation in food distribution remained unanswered. Therefore, it has been greatly appreciated that Mr. G. Lussier, Deputy Minister of Agriculture, explained in an address to the Canadian Grains Council Meeting in Montreal on October 25, 1977, "the White Paper simply forms the basis for the briefs to be presented to the National Food Strategy Conference".

Structure of the Food System

The current Canadian trade policy provides the food industry with effective protection. The rates of protection substantially exceed those of other manufacturing industries. For example, rates as high as 40 per cent protect the poultry processors. Yet the productivity of the PDR declined in the 1970s. The Food Prices Review Board concluded in 1974-75 "that the recent record of productivity in the food industry is poor", but data on efficiency are very scarce indeed. Many of the companies involved are branches of U.S. firms. Conse-

quently if research was conducted, it concerned American conditions. In Canada research and development in food processing is almost non-existent. This writer has analysed the productivity of PDR in Quebec (which may be — *mutatis mutandis* — representative for other parts of Canada). Two measures of increased productivity were used: value added per employee, and value added per \$100 of wages and salaries earned. The preliminary results vary widely: the meat and poultry industry as well as the bakery products industry show extremely low values added compared to other industries. Interestingly the products of these two sectors have the largest spread between farm gate and retail prices.

The increasing importation of processed food, mainly from the United States, is another evidence of low efficiency of the industry.

From 1970 through December 1974, weekly earnings in the Canadian food and beverage industry increased by 52 per cent. The corresponding increase in the United States was 46 per cent, and the prices of most food items are substantially higher in Canada than in the United States. Representatives of PDR maintain that because of the small size of the Canadian market and of the geography of the country, these industries in Canada were necessarily less efficient. They further stressed that in many instances the high prices asked by marketing boards make it more profitable to import fresh or processed products than to use domestic supply.

We submit that one of the main problems is the total lack of cooperation between PDR and the producers. With very few exceptions PDR employees in all echelons have no experience at all in the production of their raw material. There is a lack of knowledge concerning the correlation of business and agriculture. Discussion on agribusiness fails to recognize that the farmer is

an extremely important component of the food system. Macdonald College recently offered a course in agribusiness and another on Commodity Futures in Montreal. Enrolment is surprisingly high and the student body consists mainly of people actively engaged in business; indeed, the average age of students is between 35 and 40 years. It seems that the need for specific knowledge in PDR operation is being gradually recognized.

The goal of the PDR sector is to provide basic food stuffs at prices acceptable to all Canadians. The precondition to that is efficient industry operation and restraint in product differentiation. To achieve that goal the industry needs the cooperation and collaboration of both the farmer and the consumer.

In the post World War II period the Canadian farm industry was highly productive but farm family incomes lagged behind incomes of family enterprises in other segments of the economy. It is not intended here to dwell on the various socio-economic problems of the Canadian farm industry; there is a plethora of literature on that. We emphasize that farmers need an effective agricultural stabilization program, but it should not preclude their participation in a competitive, free market. Keeping that in mind we assess the implication of the change in the farming structure as farms get larger and more commercially organized. Since Canadian data are not readily available, we refer to those provided by the U.S. Department of Agriculture. (Economic Research Service, USDA, Farm Income Statistics, No. 576, 1976.) They might project the future shape of the Canadian farm industry. In 1976, 155,000 U.S. farms had sales over \$100,000 a year. These farms now comprise 5.6 per cent of all farms and they receive almost 60 per cent of all farm cash income. Expecting a similar development we suggest that Canadian farm policy must separ-

ate the commercially specialized segment from the rest of agriculture. The latter is not the subject of this Brief; our concern is the role of the commercial producers in the food system. In that context we deplore the lack of cooperation with PDR and the often hostile attitude of some farm organizations toward agribusiness. Cooperation between PDR and commercially-oriented, sophisticated agriculture should mean a constant exchange of information.

Many fruit and vegetable growers seem not to know when certain products are needed, nor which varieties are preferred by consumers. Growers are reluctant to acknowledge that PDR must operate with quantities and cannot accept supplies which are not of uniform, controlled quality. A processor is likely to purchase one million pounds of frozen strawberries in Mexico, instead of numerous domestic parcels of different qualities. There are many other examples: firms depending on the tourist industry complain of the inefficient market behaviour of local producers and so on.

Behind these conflicts lie the two most controversial issues: the economics of marketing boards and vertical integration.

A marketing board may serve many useful purposes and act as an effective balance in the market system. However, it should not distort the market system. If it sets prices too high, the consumer is likely to turn to other commodities, either so-called "second choice" domestic products, or imported items. The result is instability if not confusion on the market and painful process of adjustment for the farmer and deprivation for the consumer. There is a dearth of studies of marketing board impact on market stability.

Vertical integration, involving contracts between farmers and processing companies, secures

a pre-set price for a pre-set volume of product. Canadian farmers are experiencing a special pattern of advance and volume contracting in their cooperation with the Canadian Wheat Board. Contracts for other commodities are usually negotiated by a committee of farmers identified with any given processing plant. Alternatively, a marketing board may act on behalf of the producers in negotiating price and other contract conditions. Broadly defined, vertical integration may be said to exist for any product where the producer is effectively tied to a single processor. Marketing of fluid milk and a very large proportion of manufacturing milk is under this type of market structure.

In the words of a prominent British agricultural economist: Vertical integration by agribusiness has grown rapidly as a result of the inevitable inability of existing marketing systems to secure the necessary co-ordination and stimulus of appropriate production systems... and take advantage of existing technologies and meet demands throughout the food sector.²

In the years after 2000 the consumer is likely to occupy an important position in the food system. There are some superficial similarities between consumers and farmers. The number of farmers is large but the atomistic nature of agriculture gives the individual farmer limited power; the same can be said about the consumer. Both farmer and consumer deal with a highly concentrated and well organized oligopoly. But here the similarity ends, and it seems that the two groups represent conflicting interests. We expect, however, that future agricultural, trade, and social programs of the Canadian government will

create cooperation between the individual components of the system by coordinating their interests.

Food expenditures in Canada declined from 21.6 per cent of disposable income in 1961 to 18.3 per cent by 1975. However, averages are misleading; low income families would spend perhaps 35 per cent of their disposable income on food while families with incomes of \$50,000 and more would spend a negligible percentage. It seems a reasonable assumption that three quarters of the population spends 20 per cent or more of its disposable income on food. About 22 per cent of that represents purchases of meals away from home. The trend toward spending more on foods consumed away from home as well as the preference of "fast" and "convenience" foods indicate that the current rate of spending will remain for the medium term future, even if the efficiency of the system increases and food prices decline relatively to other products marketed. Research results indicate that North American consumers are much more concerned with the quality, composition, and hygiene of food than with the price they pay.

That might strengthen the consumer movement, which is relatively weak in Canada. The United States Government has maintained large-scale food consumption programs since the 1930s. A recent survey has shown that in the U.S. the rate of people not having enough money for food amounted to 14 per cent and in Canada six per cent. Thus we conclude that it is not prudent to consider such schemes in Canada. The main task of the consumer in the food system is to control price and quality of food marketed and act as the final source of information about expected changes in quantity and quality of demand.

Direct producer-consumer sales expanded during the last decade with an increasing number of farmers selling their products direct to consumers as an alternative to conventional marketing methods. We estimate that more than 20 per cent of fruit and about 12 per cent of vegetables have been sold at roadside stands, on farms, and by door-to-door sales. Other horticultural products, eggs, and some dairy products are also sold by direct marketing. As mentioned earlier, producers of special products such as health foods sell most of their supplies direct to the consumer. The U.S. Department of Agriculture provides grants to innovative state projects that encourage direct marketing methods. The advantage of direct sales is the exclusion of PDR, which means lower prices, while the disadvantage appears in reduced reliability of supplies.

Recommendations

1. Government

Revise Canadian trade policy. Gradually reducing protective rates for PDR may promote increased efficiency in the industry. Revise Section 8 (2) of the Customs Tariff Act on dumping, which is ambiguous and time-consuming. Variable levies could be applied. The intervention might be determined by an instant anti-dumping committee formed by producers, PDR, and Government.

Establish a standing committee on contracts having the authority to approve or disapprove contracts between producer and PDR. Submission of contract would be compulsory.

Establish a permanent organization on food policy. It might incorporate the Government agencies involved (Agriculture, ITC, Consumer and Corporate Affairs, Statistics Canada and others). Farmers, PDR, and consumers must be adequately represented.

2. Allen, G. R., Changes in the relationship between agriculture, the food industry and trade: Markets and marketing, *European Revue of Agricultural Economics*, Vol 2-4 (1974-75) pp 433-458.

This organization would function as a planning body for agriculture and food policy. All of its planning for commercially oriented farmers would be integrated with the free market sustaining food industry, taking into account consumers' interest.

Re-structure extension services. They must be able to provide market information to farmers and provide guidelines for market oriented production. Revise priorities of supported research by attaching adequate importance to research on market intelligence and cooperation between all levels of the food system.

Support research and teaching of agricultural schools — in particular in agricultural economics — with grants comparable at least to the support granted to land grant colleges in the United States.

Revise the marketing board system by considering efficiency in production, consumer interest, and the potential of the free market system. Supply management must be taken out of the authority of regional boards.

II. University

Advanced courses in agricultural market intelligence should be

offered. Trained personnel are extremely scarce; these courses would produce new specialists. In-service training programs should be instituted; the food industry would be encouraged to employ advanced students in various stages of the system. Government grants would stimulate the private sector to contribute to the training of market specialists.

Consideration must be given to arranging courses for leaders in the food-agriculture system.

Undergraduate and post-graduate students should be trained for an efficient extension service. Proper understanding of the market and of its impact on the farmer's position calls for much better extension work than we have now. Training at university level with support of the governments must occupy an adequate role in teaching programs.

A great deal more emphasis must be placed on market oriented commodity research. Mandatory education in consumer affairs should take place at the high school level. However, universities should open their doors to consumer organizations to explain their socio-economic goals concerning food and agriculture.

PDR

A desirable economic and social climate for farmers, agribusiness, and consumers should be produced. No organization should be allowed to prevent PDR and farmers from direct cooperation. If PDR is prepared to allocate adequate funds for food and market research, cooperation with universities and colleges would create an atmosphere of mutual understanding. The participation of PDR in training programs would greatly enhance the coordination of goals.

Consumers

It is desirable that more factual information about products be available. Consumer education, including training in antimonopoly legislation, should be promoted. Consumers' concerns with environment, health, and safety should be transmitted to PDR and to producers. Consumer organizations may encourage the trend towards natural or less processed food. Much more important, however, is direct marketing of food from farmer to consumer. Following the U.S. example consumer organizations should apply for federal funds to develop a direct marketing program with an adequate training scheme.

QUEBEC HEREFORD ASSOCIATION

At the Annual General Meeting of the Quebec Hereford Association, held January 14, 1978, the following Board of Directors was elected:

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WHAT ARE little pigs MADE OF ?

by Anne Marie de Passillé
Post-graduate student,
Department of Animal Science

The expanding knowledge of the composition of the animal body is of interest to us not only because we are curious about our own body composition but also because we want to know more about what is in the meat we eat. In the past few years, there has been growing concern about the fat content of meat, since producing fat from animals is expensive and since a high fat diet is suspected, among other things, of being associated with a number of today's health problems.

Consequently, the producer has been looking for means of altering the relative proportions of the tissues of the animal body to meet consumer demands. The proportion of fat has been reduced and that of protein increased since improved breeding and nutrition practices were developed and put into use. This is seen especially in the case of swine, where the shape and type of market pig has been altered by selection from a high to a low lard producing animal in most of Europe and in North America. In contrast a premium is paid in southern Europe and Latin America for a fat carcass.

Nevertheless, in North America we are demanding a further reduction in fat content of the pig carcass. Perhaps the study of body composition changes during growth could lead to the identification of selection traits (biochemical characteristics) or of management practices (variation in the level of feeding at critical periods) which would achieve this decrease without damaging meat quality.

However, we do have some information on the body composition of the newborn piglet and on the changes in composition during

the first 10 days of life. This information, at this time, gives us some insight into the reasons why piglets show such a high mortality rate prior to weaning. If you read Professor Hartsock's article in the May 1977 issue of the Macdonald Journal, you are already aware that swine producers are subject to costly losses because over 20 per cent of liveborn piglets die before the age of weaning. Since Professor Hartsock already outlined a number of management tactics which can help you minimize these losses, I would like to discuss some of the reasons why these losses occur.

Every year, a large proportion of the total liveborn losses are due to the poor survival of the low birth weight piglet. However, the newborn piglet, regardless of its birth weight, is very susceptible to environmental conditions, such as hunger, cold, and infection. These predispositions are due to the scarcity of the newborn piglet's available energy reserves, to its in-existent immune protection, and to the immaturity of a number of mechanisms it requires to maintain equilibrium in its new environment outside the dam's uterus.

Piglets must suckle shortly after birth to obtain the dam's colostrum because it is rich in immunoglobulins and energy. Immunoglobulins are essential to newborn piglets because they provide defence against disease and infection. Energy is also critical, since newborn piglets need it to maintain blood glucose levels and assure the necessary increase in their metabolic rate, so that ultimately their body temperature will stay normal. If the body temperature of piglets decreases, they become weak and apathetic and therefore simple prey to sow overlay and starvation. They do not move away from the dam when she lays down, and they are slow

getting to the udder and have difficulty competing for a teat.

How much water, fat, protein, and minerals contained in piglets' carcasses at birth may explain a part of the newborn piglet's poor resistance to starvation and cold. We found, as did a number of other researchers, that newborn piglets, on a live weight basis, are made up of 80 per cent water, 12 per cent protein, 0.5 per cent fat and 5 per cent minerals. This means that the newborn piglet is made up of mostly skin, bones, internal organs (liver, heart, lungs, intestine, etc.), and a bit of muscle.

Surprisingly, the newborn piglet has very little fat. Actually, the small amount it does have is structural, which means that it is part of the membrane of cells in the body and brain but is not found under the skin, as subcutaneous adipose layer, or in the muscle, as intramuscular adipose tissue. Therefore fat provides little insulation or energy reserves for the newborn piglet, since the subcutaneous adipose layer usually acts as insulation to keep heat from flowing out of the body and since, along with intramuscular fat, it also acts as an energy reserve.

Newborn piglets have a very scarce hair coat which assures little protection against the cold, especially if we compare it with that of newborn cats and lambs. The combination of a scarce hair coat and a non-existent fat layer results in the newborn piglet having very little insulation from the cold. Therefore piglets lose much body heat to the surrounding air when ambient temperatures are cooler than 32 to 34°C. During the first few days of life, the piglet is not very efficient at producing heat to make up for these losses so it is critical to keep these animals

warm, especially right after birth when the membranes are drying off and causing severe heat losses from the body.

Body composition information also illustrates the problem of low energy reserves in the newborn piglet. The piglet is born with important glycogen reserves in the liver, heart, and muscles. Glycogen reserves are sources of glucose, and therefore of energy, and are used up at a very rapid rate during the first postpartum day,



Above: Lard-type hog on-the-hoof (and her dew claws!). Below: Carcasses of modern, meat-type (left) and lard-type hogs showing large amount of leaf (kidney) fat in lard-type.



although, with protein, they can sustain the piglet for up to three days when it is starved. However, the piglet who suffers trauma during delivery is born weak and has used up a large part of its stored glycogen. This piglet will remain weaker than its littermates if it does not suckle soon after it has regained a little stability, since an important part of its energy reserves have already been partially consumed.

Piglets therefore need to suckle soon after birth to get energy, immunoglobulins, and fat from the dam's colostrum. Part of this energy and fat goes to building their adipose tissue insulation. This starts soon after birth, since at 12 hours the beginning of a subcutaneous adipose layer can be identified in suckling piglets and

by 10 days it is already one half to 1 inch thick.

The body composition of 10-day-old piglets indicates that major changes occur in the body of the piglet during the early neonatal period. Water, minerals, protein, and fat all increased in weight but the relative proportions of each of these in the body change drastically from birth to 10 days: water percentage decreases from 80 per cent to 70 per cent and mineral percentage from 5 per cent to 3.5 per cent, while protein percentage increases from 12 per cent to 15 per cent and fat percentage shows a dramatic increase from 0.5 per cent to 10 per cent. These changes in body composition indicate that during the first 10 days of life, the fastest growing tissue is fat, then muscles and internal organs, and finally bone.

Although there are no differences in body composition between piglets at birth, not even between the largest and the smallest (sometimes a fourfold difference in birth weight), there is a lot of variation between that of 10-day-old piglets. Most of this variation is due to the broad range of fat content in the carcasses of 10-day-old piglets. For example, a runt can have a fat percentage as low as 2.5 per cent while the fastest growing piglets are as high as 13 per cent.

A runt is a slow-growing piglet. By 10 days of life it has gained much less weight than its littermates, who have doubled or almost tripled their birth weight. Nevertheless the runt puts on fat. This is quite surprising, because we would expect that the runt, who is not getting enough milk to grow on, would save all its energy for muscle and bone growth and not use any for fat deposition. Perhaps fat deposition is a priority for very young piglets, since they need a subcutaneous fat layer to insulate them from the cold. Furthermore, in the wild, very young piglets may have an extra requirement for this fat layer: they use it as an energy reserve when they leave the dam's nest for a more or less extended number of hours to go scavenging far away.

Further research on the fat deposition mechanisms of the newborn pig may help us identify some of the factors which control this aspect of their growth and therefore help us establish means of increasing piglet survival rates before weaning and of decreasing the fat content of the market hog's carcass.

Macdonald Reports

by Jim Feeny

ONE CABBAGE PLUS ONE RUTABAGA EQUALS ONE CABBAGE

Anyone who remembers their arithmetic lessons from elementary school may be wondering about the above statement. It seems to defy the lessons so painfully (in my case, at least) instilled in our minds in those days; my grandmother's instructions in the farm vegetable garden did not include anything like this, either.

However, it's not just the new math that accounts for the title of this article. Professor W. F. Grant, a geneticist at Macdonald College, is involved in an experiment that does result in cabbage being crossed with rutabaga in the hope of producing more cabbage.

The reason behind the experiment is that cabbage varieties now being grown commercially in Quebec are susceptible to a fungus disease called clubroot. This disease has been a problem for Quebec cabbage-growers for quite some time; one of the reasons being that it has evolved from one form to another over the years. Five years ago, it was clubroot race 6 that infested most local cabbage fields. This was not too serious, though, as cabbage varieties grown here are resistant to that particular race. In the past four or five years, however, clubroot race 6 is gradually being pushed out by a new one: race 2. None of the cabbage varieties resistant to race 6 are resistant to race 2. Therefore, Quebec cabbage growers faced serious losses in their fields.

The challenge to plant scientists was to develop new cabbage cultivars that would be resistant to clubroot race 2, and preferably any new clubroot races that would come along in the future.

Drs. M. S. and B. Y. Chiang of the Agriculture Canada research station in St. Jean, Quebec, undertook the study, assisted by Dr. Grant here at Macdonald. The method they hit upon to accomplish the objective was to cross cabbage with closely related cole species, in this case rutabaga and rape, that were already genetically resistant to clubroot.

Rutabaga and rape are naturally resistant to most races of clubroot. By crossing these two species with cabbage, the researchers succeeded in introducing this natural resistance to the offspring of the union. There were two main problems, though. Firstly, the end result of the cross did not exactly resemble cabbage. Secondly, many of the offspring of the cross were sterile and would not breed true in succeeding generations.

The reason for the sterility problem is that though rutabaga and cabbage are similar in their genetic history, they are not identical: each has a different chromosome number. This means that as the two plants were crossed, the resultant hybrids had chromosome numbers different from either of the parents. This forced the scientists to manipulate the crosses so that the sterility problems could be overcome and then bred out in later generations.

The experiments have now produced plants that are genetically resistant to clubroot and that will breed true in the following generations. The work is not yet completed, however. Drs. Chiang and Grant now have to backcross the hybrids with cabbage. While breeding to overcome the sterility problems, many cabbage characteristics were lost. The objective of the breeding program this year is to restore market cabbage characteristics to the hybrid plants.

When this has been completed, the new cabbage varieties will be available for release to commercial growers.

WOODSMEN AT MACDONALD

Bob Watson remembers November 14, 1953, as a wet, misty day on the Lower Campus of McGill University. Why should this particular date stand out in his memory? It's simply that the first intercollegiate woodsmen competition that Macdonald College ever participated in was held that day. Two teams of Aggies from Mac, fortified by a crate of apples "borrowed" from the Horticulture Department, travelled downtown to capture first and second places that day.

There have been a few changes in the woodsmen competition since that fall day a quarter of a century ago. The competition is no longer sponsored by the McGill Outing Club, its first organizer. New events have been added to the competition. And most important of all, Macdonald now hosts the intercollegiate competition.

Some things have stayed the same, though. Macdonald College has remained in the top standings, winning first place for the last two years. And Bob Watson, Foreman of the Morgan Arboretum, is still the Coach of the Macdonald team.

Woodsmen is the major intercollegiate sport on Campus. The teams take part in two intercollegiate competitions each year: one in November at the University of New Brunswick and the hosted one here at Mac in January, which is held at Carnival time. Three teams participate: one women's team and two men's. Each competition is an international event with teams from Ontario, Quebec, the Maritimes, and the New England States participating.

The competition includes some 16 different events. These include felling and twitching, log splitting, swede sawing, crosscut sawing, and a gruelling mile and a half snowshoe race, to name a few. Some of these are team events, but many are individual contests. Each team member must choose one event in which he or she will specialize. That person then represents the team's chances in that particular event.

The competition focuses on traditional woods' skills: chopping, splitting, felling, sawing, and so on. All of these are physically demanding activities, and many readers will imagine that woodsmen (and woodswomen) must be huge brawny bruisers, along the lines of the legendary Paul Bunyan. It's not necessarily so, Bob Watson says. He explains that the time the team members spend practicing and developing skills in their events is much more important than the physical strength they start out with. Enthusiasm and dedication count for much more than size.

Dedication is important, no doubt. The Mac team practices hard, and practices often. These practices start about a month before each of the two intercollegiate competitions, and are held in the Morgan Arboretum. The catch is that the practices start at 6 a.m. each weekday morning. This means that the woodsmen must be out of bed at around 5 a.m. One hour later, they're doing wind sprints and pushups before going on to practice the actual woodsmen events. By the time the competition rolls around, Bob says, "The kids are in shape."

Jumping out of bed at 5 a.m. every morning to do pushups in an open field in the middle of January is not a habit associated with the majority of Macdonald students, to say the least. I asked several woodsmen what it is that motivates them.

The same answers came back time after time: pride and fellowship. They take the competition, and their parts in it, very seriously.



Mac Woodswomen show their skills at crosscut sawing.

Hank Braam, a New Brunswick student in his final year at Mac, explained that since each woodsman competes in an individual event, the team's final standing in the overall competition largely depends on the sum of the individual efforts. This puts tremendous pressure on each contestant. If you don't do well in your own event, you let down the entire team. As Hank says, "you feel pretty bad if that happens."

Barry Russell, another New Brunswick native, adds that the emphasis in woodsmen is on individual achievement. "You're really competing against yourself, trying to improve your own performance each day. If you've completed your event in 80 seconds one morning at practice, you're trying to cut it down to 75 the next day, and even further the next."

Thankfully, all of this emphasis on individual competitiveness does not divide the teams into bickering factions. Any Mac student or staff member will admit that no one on campus has as much spirit or group identity as the woodsmen. Each team member has the full support of his mates. During the actual competitions, each woodsman is out rooting for the other team members. Bob Watson says that one can always pick out the Mac team on the competition field: just listen for where most of the noise and cheering is coming from, and that'll

be the Mac teams cheering on their members.

Though Mac Woodsmen take the competition very seriously, this does not mean that they are poor losers. Bob says that woodsmen are good sportsmen, accepting defeat graciously, even though they may not like it very much. This is a trait shared by woodsmen from other Universities, too. At the end of the competition, when the results are announced and the trophies are handed out, all winners are wholeheartedly cheered by the other teams.

Other than their love of the competition, it's hard to hang a common handle on the woodsmen. Both men and women are members of the teams. Though many come from the Maritimes or other rural areas where they have worked in the bush, many others are from urban centres in Quebec and have rarely even seen an axe before joining the teams. When the swede saw blade snaps in the middle of the event, some woodsmen will comment on the matter in french; others will make rather improbable statements, in the Queen's english, concerning the ancestry of that particular blade.

Bob Watson does suggest one aspect all woodsmen have in common, though. He says that he respects them deeply and would be proud to be personally related to each and every one of them. Despite their high spirits and love for a good practical joke

nany with Bob as the chief
ictim!), the woodsmen have
lways added to the good name
f the College, never darkened it.
ob respects the woodsmen as
eing real people.

n outside observer such as my-
elf is able to pick out one more
rait the woodsmen share: a
eep and abiding respect for
neir Coach. Any woodsman
assing through Macdonald will
nclude a visit to Bob's workshop
n the Arboretum in his or her
inerary; no matter if he graduated
n 1977 or 1957. The bonds are
hat strong.

ob Watson retires to Magog
ext year, but he is not retiring
rom the woodsmen. He'll be back
o help the teams get ready for
heir competitions, to make sure
hat blades are sharpened properly,
hat the teams have proper wood
o practice with, and to generally
ncourage the team members. It
ll adds up to Macdonald's retain-
ing their winning tradition.

PROGRAM REVISION AT MAC

he Faculty of Agriculture has
ntroduced major changes in
hree Academic options here at
Macdonald: Agriculture, Animal
Science, and Plant Science.
The changes in the options,
summarized below, will take effect
his September, effecting

students entering their first
year in the degree program at
that time.

The basic change has been to
increase the number of required
courses in each academic option,
with more attention being paid
to introductory science courses
than has previously been the
case. This is especially noticeable
in the General Agriculture major.

Dr. Alan Watson, Chairman of
the Curriculum and Course
Revision Committee, says that
one of the objectives of the
change was to give students a
better appreciation of the basic
sciences, which would greatly
increase their understanding of
principles brought forth in later,
more specialized courses. For
example, all General Agriculture
students will now study Genetics
and Biochemistry in their first
year here. This means that
professors teaching courses in
animal and plant production will
not have to devote a great deal
of time to basic genetics or
biochemistry, as is often the
case now. They will have more
time to lecture on more advanced
topics within their specialties.
This will enable the student to
receive a better understanding
of the material being covered,
while allowing him or her to
cover more material in the first
place. Dr. Watson feels that this
should benefit all students,

especially those planning to go
on to do post-graduate work.

The result of the revision is
a more structured program for
the Bachelor of Science in
Agriculture degree, and Dr.
Watson feels that this is just
what many students have been
requesting. The more structured
program will greatly reduce the
amount of duplicatory course
material for the students — i.e.,
the same basic topics being
covered in four or five production
courses. The common course
background which the revision
should give the majority of
students is the key here.

Dr. Watson says that the program
revision will provide students,
—who have a fair general back-
ground in agricultural sciences,
with an option to specialize.
Thus the hope is to put even
more meaning into Macdonald's
traditional slogan: "Mastery for
Service." By providing students
with the opportunity to gain a
better mastery of their subject
material, the Faculty hopes to
turn out graduates who can be
of even more service to the
agricultural community.

The old and new required courses
for each major are compared
below.

ANIMAL SCIENCE MAJOR

Old

Principles of Plant Science	2 credits
Principles of Soil Science	3 credits
Biochemistry 1	2 credits
Biochemistry 2	3 credits
Biochemistry Lab.	2 credits
Principles of Animal Science	2 credits
Introduction to Genetics	3 credits
Cellular Biology	3 credits
Statistical Methods 1	3 credits
Principles of Animal Breeding	3 credits
Animal Pathology	3 credits
Mammalian Physiology	4 credits
Fundamentals of Nutrition	3 credits
Applied Animal Nutrition	3 credits
Dairy Cattle Production or Beef and Sheep Production	3 credits
Swine Production or Poultry Production	3 credits
Seminar	2 credits
Two Economics Courses	6 credits
The Microbial World	3 credits
Chemistry of Food Products	3 credits
	59 credits

New

Principles of Plant Science	3 credits
Principles of Soil Science	3 credits
Biochemistry 1	2 credits
Biochemistry 2	3 credits
Biochemistry Lab.	2 credits
Principles of Animal Science	3 credits
Genetics	3 credits
Genetics Lab.	2 credits
Cellular Biology	3 credits
Statistical Methods 1	3 credits
The Microbial World	3 credits
Principles of Animal Breeding	3 credits
Animal Pathology	3 credits
Mammalian Physiology	4 credits
Fundamentals of Nutrition	3 credits
Dairy Cattle Production	3 credits
Beef Cattle and Sheep Production	3 credits
Swine Production	3 credits
Poultry Production	3 credits
Seminar	2 credits
Two Economics Courses	6 credits
Chemistry of Food Production	3 credits
	66 credits

(Continued on page 16)

The Family Farm



Published in the interests of the farmers of the province by the Quebec Department of Agriculture.



ANOTHER Q.A.I.C. SERVICE: Progeny Testing of Young Dairy and Beef Cows

Today, it is no longer necessary to prove to dairy and beef producers the importance of using tested bulls to ensure reproduction within their herd. In fact, the Quebec Artificial Insemination Centre, concerned with ensuring adequate progeny with respect to the quantity and quality of Quebec cattle, each year submits the greatest possible number of young bulls for progeny testing. The aim of this testing is to determine as closely as possible the heredity potential of bulls.

What is Progeny Testing?

The Q.A.I.C. regularly purchases young bulls, born of the main dairy and beef breeds with excellent conformation and high genetic merit. Then, once the young males have reached the required physiological development, a sample of the semen is collected, frozen, and distributed to each of the local inseminators for use as soon as possible.

For most cattle breeds, 250 inseminations are generally sufficient to determine the potential of a breeding animal. However, with Holsteins and Herefords, 400 inseminations are required before the potential of the young bulls can be adequately appraised.

Once the required number of inseminations for appraisal has been performed, the young bull is removed from regular service, until the performance of his progeny can be determined. The Q.A.I.C. takes advantage of this waiting period to build up reserves of frozen semen. If the progeny of a bull on test proves superior, he is immediately returned to

regular service. If not, the bull will be culled and the reserve of his semen destroyed.

Conditions of Admission to the Program and Mode of Payment

Aware of the need to increase as rapidly as possible the number of proven bulls made available to Quebec breeders, the Quebec Department of Agriculture covers the complete cost of each first insemination performed with semen from a designated young bull, and this during a period determined by the Q.A.I.C.

However, to benefit by this program, breeders of dairy cattle

must, without exception, carry out an official type of milk recording for purposes of bull appraisal. Breeders of beef cattle must belong to the Federal-Provincial R.O.P. program.

As regards mode of payment, it should be noted that all A.I. certificates will be verified by the Q.A.I.C. Following this, every three months, breeders who will have participated in the program will be reimbursed by cheque for the number of inseminations performed in accordance with the above conditions.

Further information on the program may be obtained from any local agriculture information office or from the Quebec Artificial Insemination Centre, P.O. 518, Saint-Hyacinthe, Quebec, J2S 7B8.

OTTAWA QUEBEC AGREEMENT TO IMPROVE QUEBEC'S SELF-SUFFICIENCY IN THE LIVESTOCK FEED SECTOR

Chicoutimi, February 17, 1978 — Eugene Whelan, Federal Minister of Agriculture, and Jean Garon, his Quebec counterpart announced that a federal-provincial agreement had been reached over the use of \$35.5 million on the implementation of four programs intended to help Quebec farm producers increase their self-sufficiency in the livestock feed sector. This amount is federal compensation for the withdrawal of assistance for the transport of feed grains to Quebec.

At present, Quebec supplies only 34 per cent of its needs in cereals for forage, the rest being imported from the prairie provinces, Ontario, and even the United States.

Under this agreement, the federal government undertakes to pay

to Quebec producers the entire cost of the program (with the exception of most of the administrative costs, which are assumed by the province), to the extent of \$6.7 million per year, over the next five years, beginning on April 1, 1978.

The two Ministers announced that four programs will be offered to Quebec farmers. These programs will make it possible to finance grain storage installations on the farm, including silos, ventilation systems, and corn dryers. Farmers will also benefit by subsidies for the purchase of grain harvesters, dryers, and forage silos in order to improve storage and increase the quality and quantity of cereal seeds and forage crops produced in Quebec.

he programs will be administered by the Quebec Department of Agriculture, and its representatives working in the various regions will ensure a liaison with producers. Farmers wishing to participate in the programs must contact their local Department office. A federal-provincial committee will supervise the general administration of the program.

WEEDS AND GRAIN CORN

A 1974-5 survey of grain corn producers in the Saint-Hyacinthe region carried out by Dominique Royon and Claude J. Bouchard, agronomes with the Crop Protection Research Service of the Quebec Department of Agriculture, shows that weeds still constitute a threat to this crop.

Herbicides

Even though the use of herbicides has considerably reduced the weed population, particularly with respect to broad-leaved weeds, a proportionately large number of fields are still infested. In fact, crabgrass, quackgrass, field horsetail and, more locally, fall panicum and yellow nut sedge continue to infest the crop. With the possible exception of yellow nut sedge and field horsetail, effective control methods are known and recommended for corn crops.

The limited use of grass herbicides, insufficient doses of atrazine and spraying done under unfavourable conditions may account for most of the serious occurrences of weed infestation.

Soil Deficiencies

Following soil analysis of grain corn fields surveyed in the St. Hyacinthe region, the Department specialists were surprised to discover that in several fields the soil was too acid for corn crops and that the fertilization program did not supply sufficient potash for this crop. As a rule, soil deficiencies are easily dealt with. The results of the analysis are

all the more surprising in that producers in the region have been growing this crop for almost 15 years. They are thus well aware of the necessity of good fertilization for high yields.

The survey showed several fields to be very deficient in organic matter (some as low as two per cent), which is very serious and difficult to correct. The specialization of farmers in industrial crops, which take up all available land, is often marked by the absence of crop rotation and by a decrease, and even a complete disappearance of farm animals. As a result, it is becoming more difficult to maintain a balanced soil and, moreover, there is a loss of manure, which is the main source of organic matter.

Weeding Program

The growing of grain corn, which is often done over large areas, is inconceivable without the chemical control of noxious weeds. In fact, all of the 123 fields that were visited had been treated with atrazine, an excellent herbicide for broad-leaved weeds, which, however, is not always applied under necessary conditions, nor in sufficient doses. In many cases, the weeding program must be oriented towards the destruction of grasses and perennials.

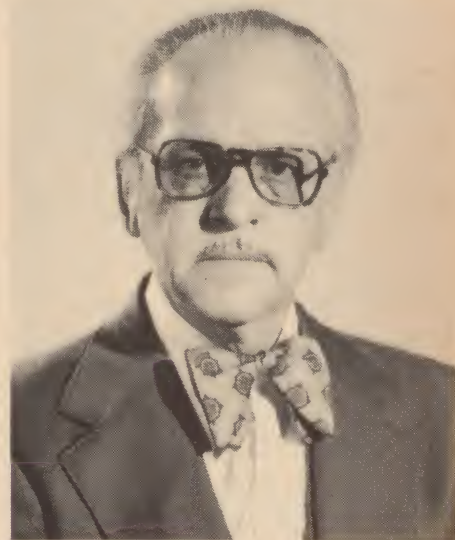
Give it some serious thought this year and make sure to consult the agronome at the local or regional office of the Department to find out what treatments to use. The Department's Crop Protection Research Service also reminds you, however, that the need to keep a stand free of weeds should not make you forget to establish and maintain the right soil conditions for the crops you wish to grow.

Inspector General of Weeds

Mr. Rodolphe Cloutier, agronome with the Crop Protection Research Service of the Quebec Department of Agriculture, was recently

appointed inspector general of weeds. He will be responsible for the implementation of division IV of the Agricultural Abuses Act concerning weeds.

An experienced agronome, Mr. Cloutier worked in the Agricultural Marketing Branch of Agriculture Canada and as a farm journalist. He was also regional representative



Mr. Rodolphe Cloutier

for Saguenay-Lac Saint-Jean on the Quebec Crop Insurance Board, and in 1976, joined the Crop Disease and Weed Warning Network of the Department's Crop Protection Research Service. In his new capacity, he will coordinate the implementation of the said Act throughout the province. In this connection, Mr. Cloutier will soon begin a tour of local and regional Department offices and Quebec municipalities in order to better inform them of this Act.

EXTRA CAUTION WITH FUELS

Can you list the features of a good gas tank? Do you know why fuel tanks are silver in colour? Such questions deserve to be answered. Too often problems arise from ignoring the basic rule of fuel storage and handling.

Choice of Fuel Tank

A fuel tank that requires refilling every two to three months is

preferred. The tank should be cylindrical, or at least have a rounded base. There should be a drain at the opposite extremity of the pump. The suction pipe should end three inches from the bottom so that sediment will not be drawn up. In order to reduce evaporation largely caused by heat, the tank should be silver in colour, since this colour hardly absorbs the sun's rays. Finally, a pressure valve (14 pounds per square inch) should complete a good fuel tank.

Installation

It is recommended that the tank be placed at least 40 feet from all other buildings in order to reduce the risk of spreading fire. It is also advised to tilt the tank slightly to facilitate the removal twice a year of water and sediments that have accumulated at

the bottom. Although placed at ground level, the tank must not touch the ground, if rusting is to be avoided. The tank should be refilled once in early spring and again in the fall when refineries modify the composition of their fuels; in the winter, fuels are more volatile to permit easier starts. Also bear in mind that a recognized dealer with a large clientele restocks his fuel supply regularly.

Refueling

The tractor should be refueled at the end of the work day, thus driving the humid warm air out of the tank and preventing it from condensing at the bottom of the tank. Tractors are equipped with a sediment bowl to collect the water and other sediments that

must be emptied each day to ensure easier starts. As well, for maximum performance, the fuel filters must be changed periodically according to the manufacturer's recommendations. When refueling, make sure that the nozzle is clean and wipe off the cap and spout of the fuel tank. Fill the tank to about one inch of the spout to permit the fuel to expand without overflowing.

Never smoke when refueling and turn off the tractor's electrical accessories. Allow it to cool off before refueling and avoid overflow on the motor.

(Continued from page 13)

GENERAL AGRICULTURE

Old	
Principles of Animal Science	2 credits
Economics of Agriculture	3 credits
Statistical Methods 1	3 credits
Principles of Plant Science	2 credits
Principles of Soil Science	3 credits
Seminar and Assignment	2 credits
Technical and Research Writing	3 credits
Communications Extension Methods	3 credits
Introductory Meteorology	3 credits
	24 credits

PLANT SCIENCE MAJOR

Old	
Principles of Animal Science	2 credits
Cellular Biology	3 credits
Plant Anatomy and Histology	2 credits
Systematic Botany	4 credits
Plant Physiology	4 credits
Biochemistry 1	2 credits
Biochemistry Lab.	2 credits
Economics of Agriculture	3 credits
General Entomology	3 credits
Introduction to Genetics	3 credits
Statistical Methods 1	3 credits
General Plant Pathology	3 credits
Principles of Soil Science	3 credits
The Microbial World	3 credits
	40 credits

New

Principles of Animal Science	3 credits
Principles of Plant Science	3 credits
Principles of Soil Science	3 credits
Principles of Economics 1	3 credits
Farm Production Economics	3 credits
Biochemistry 1	2 credits
Cellular Biology	3 credits
The Microbial World	3 credits
Genetics	3 credits
Statistical Methods 1	3 credits
Extension Methods	3 credits
Mammalian Physiology or Plant Physiology	4 credits
Seminar	2 credits
One Animal Production Course	3 credits
One Plant Production Course	3 credits
	44 credits

New

Principles of Animal Science	3 credits
Cellular Biology	3 credits
Plant Anatomy and Histology	2 credits
Systematic Botany	4 credits
Plant Physiology	4 credits
Biochemistry 1	2 credits
Biochemistry Lab.	2 credits
Economics of Agriculture	3 credits
General Entomology	3 credits
Statistical Methods 1	3 credits
General Plant Pathology	3 credits
Principles of Soil Science	3 credits
The Microbial World	3 credits
Genetics	3 credits
Genetics Lab.	2 credits
Principles of Plant Science	3 credits
Soil Chemistry and Fertility	3 credits
	49 credits

QWI

Queen's Jubilee Medals

Congratulations are in order for three members of the Quebec Women's Institutes who received the Queen's Jubilee Medal, commemorating the 25th Anniversary of the Queen's Reign. The recipients were: Miss Edna L. Smith, Past President, Mrs. Walter Milgour, President, and Mrs. Jas. Robertson, Area Vice-President for WIC.

Annual Convention

The dates for the Annual Provincial Convention are: May 29, Executive Meeting, May 30, Board Meeting, and May 31 and June 1, Open Convention.

Guest speakers on Wednesday, May 31st, will be Mrs. J. Beilish, President of the Federated Women's Institutes of Canada and Mr. L. E. Lloyd, Vice-Principal of Macdonald College and Dean of the Faculty of Agriculture.

It is hoped that we will have the "best ever" display of handicrafts. A reminder that all handicrafts for the Competitions must be in the Provincial Office by May 20, 1978. **Do not** send them in with delegates — there will not be time for judging.

The new **QWI Cookbook** should be published in time for Convention. A firm price cannot as yet be set but the book should not be more than \$3.00. If branches send advance orders to Mrs. G. Knights, Provincial Convener of Home Economics, Box 5, Sutton, P.Q., J0E 2K0, the cookbooks will be brought to Convention where Mrs. M. Lewis will distribute them. They may be picked up and paid for by the Branch delegate, thus saving mailing expenses.

International Dinner

Last November a special culinary treat was in store for 150 guests who accepted the invitation to an "International Smorgasbord Dinner" at the church hall of Grace Anglican Church, Sutton. The event was organized by the Women's Institute of Sutton. "With so many people of different origin in our area, it seemed a natural thing to do," explained Ola Carr, President. "I have had many compliments; all guests really enjoyed the various foods and the pleasant atmosphere."

The members made a special effort to make this idea a success. The walls of the hall were decorated with travel posters from different countries. The table decorations — small bowls with evergreen, Japanese tapered lanterns and little flags, and Chianti bottles with long tapered candles — added a pleasant visual touch. Each candle represented a colour used in most flags. Soft, international background music (tapes) and hostesses, wearing national costume or long skirts, contributed to the dining pleasure.

Each guest received a "Menu scroll" at the cash table in the vestibule, and the buffet included: Dutch Limburg hussar salad, German potato salad, vegetable salad, Hungarian goulash, cold cuts, tourtieres, home baked beans, assorted jellied salads, assorted pickles, rolls. Desserts were English rock cookies, Swiss brezeli, pies: pumpkin, apple, glazed fruit.

The Sutton members were able to expand their motto "For Home and Country" with this international dinner. They also demonstrated their ability in

handicrafts, which were displayed and sold at a craft table in the vestibule. "Many guests commented on the beautiful work of our members," said Ruby Knights and Hilda Howard, who boiling, then drop in the cucumbers were in charge of the international craft collection.

"We have several members who were born outside Canada, and they have been a big help in this effort," commented Ola Carr.

She extends her appreciation to all helpers and thanks the public for the support. Mrs. Carr hopes, that the "International Smorgasbord" will become an annual event in Sutton.

PICKLES

May we suggest that you keep these pickle recipes until pickling time rolls around again with all those spicy aromas coming from the kitchen. At one of our Institute meetings (**Ascot WI**), each member brought in her favourite pickle recipe. One of our members typed these on sheets to be distributed to members. So now we have these tested recipes to choose from for our pickling. Here are a few chosen at random:

Tomato Butter

7 pounds ripe tomatoes
3 pounds sugar
1 pint vinegar

Boil 4 hours slowly. Ten minutes before done add 1 teaspoon each of cinnamon, cloves, and salt, dash of pepper.

Cucumber Pickles

- 5 pounds cucumbers, peeled and cut in pieces
- 1½ pounds sugar
- 1 tablespoon salt
- 1 pint vinegar
- 1 teaspoon cinnamon
- 1 teaspoon cloves

Boil all together till the cucumbers pierce easily with a toothpick, Bottle in sterilized jars and seal. (I heat the vinegar, etc., to bers.)

Fruit Relish

- 30 ripe tomatoes, peeled
- 6 pears
- 6 large onions
- 6 peaches, peeled
- 3 green peppers, seeds removed
- 5 cups sugar
- 2 tablespoons salt
- 1 ounce ground mixed spices
- 1 quart cider vinegar

Chop all fine and boil slowly for two hours.

Mrs. M. C. Sewell, Publicity Convener, Ascot WI.

Dear WI Members,

The end of the month again and your publicity convener's reports for February are sorted out on the table beside me. This same month is supposed to wear a coat of many colours. I wondered about that at first but, if one looks closely, the world isn't all white. The reflection from the bright sun brings out varying shades of grays and blues, sometimes there is a creamy look, and I have even glimpsed a pink and an orange tinge. In protected places I have seen purple shadows. But this letter is for April and this elusive snow landscape will be gone. There will be some cold, rainy days, but we will have warm breezes and blue skies, for this is the time of growth. There will be smells of an awakening earth, green tips will appear,

and in favoured spots a few brave flowers will be spied. Our dream of spring has come true! The brooks and streams are tawny and noisy, and rush busily past us, chuckling and unfettered on their destined course.

Our WI ladies have been busy, too. The Executive has met, plans have been made for annual meetings, new slates of officers prepared, and already thoughts are travelling to our Annual Provincial Convention.

All members of QWI will, I am certain, join me in expressing sympathy to **Rouville County** members on the recent death of their President Mrs. W. Rayson.

The **Frontier** Group met at the Lachute Presbyteriam Church and entertained Jerusalem-Bethany. Mrs. June Skinner gave a macramé demonstration and refreshments were served at tables decorated for St. Valentines. The roll call at **Brownsburg** was an exchange of homemade Valentines. Each member of **Pioneer** was to answer the roll call by bringing in a Valentine for a shut-in and the secretary was to send them to the person mentioned. At **Dalesville-Louisa**, Mrs. Jean Clark, County President, gave provincial and county news and told about her visit to the branches in the western provinces.

At **Upper Lachute East End**, 23 members and three guests sat down to a delicious bean supper at the home of Mrs. Roger Lyster. Each member answered the roll call by naming a song which best described her husband.

From **Grand Cascapedia**, Bonaventure Country, we learn that the President's banquet was held at the Cascapedia Hotel with Mr. Ivan Robertson as guest speaker and Mr. J.A. Campbell as master of ceremonies. Dinner was followed by music and dancing. This branch is preparing the house log. The 14 members present at

Matagami answered the roll call by naming a famous woman, past or present, and telling why they admired her. Wool was distributed to be knit for CanSave. This same branch held a successful joint party with the Protestant Women Guild.

Two branches from Missisquoi County, **Dunham** and **Fordyce** answered the roll call by bringing in Valentines for shut-ins. **Dunham** held a craft night, and a good variety of old and new crafts was displayed. The speaker at **Fordyce** was Miss Elizabeth Watson, retired RN from the District Health Unit. She told how McGill, in affiliation with the Royal Victoria Hospital, is introducing a new program where doctors will be making house calls. Hopefully areas in Quebec will eventually use this service and set up this type of clinic. To date there are only three such centres in the province: Quebec City, Montreal and Cowansville. People of this area feel fortunate to have this service.

At the meeting of the **Inverness** branch an article God Bless those who Visit Shut-ins was read. This was a plea from a mother who hoped her children would read it and come to visit her. This should remind all of us to visit Senior Citizens, sick and shut-ins more than we do.

Kinnear's Mills reports a new member, Mrs. Edna Campbell. An amount of \$21,000 worth of Dominion Store Stamps was turned in.

From Richmond County six branches reported. An interesting roll call from **Shipton**: Name the best bargain you ever had. The answers must have been interesting. This branch also donated to A.D.S. Elementary School to help defray expenses of a class trip to the United Nations. At **Gore** a life membership was presented to Mrs. Jessie Griffith by the President, Mrs. Ruth Mountain. At the

close of the business meeting, cards and games were enjoyed by members and husbands followed by a salad and ham supper. At **Richmond Hill** quilt blocks were brought in to be put together and used for fire victims and needy families. A former member, now in Ontario, sent a donation to the Betty Mason Scholarship Fund. An auction was held with the money to go to charity; there was a jumble sale with proceeds for the handi-bags. The **Richmond Young Women** gave towards a geriatric chair for the Wales Home. The roll call at **Cleveland** was name a change of the last 40 years for which we should be thankful. The Education Convener described a booklet about special equipment available for the handicapped, put out by Bell Canada. At **Spooner Pond**, the members heard excerpts from the Green Paper on Education and from a magazine on the unnecessary packaging of small items, making prices higher. All branches in this county have contributed to Sister Danaher's project in opening her home to girls who need a helping hand. They attend school in **Richmond** where Sister Danaher is a counsellor.

The **Crompton County** Bursary Committee has announced that Donna Taylor of Birchton won the C.D. French Memorial Bursary and Debra Stickles of East Angus, the Compton County WI Bursary.

Brookbury signed a protest letter concerning the price of text books used at C.E.G.E.P. level. Prizes were given on a jumbled word contest on these subjects, "What's your job," "Arms and Legs" and "Buying and Selling". At **East Angus** the roll call was answered by naming a country in the United Nations and telling something about it. This branch ordered 10 copies of Federated News. **Sawyerville** had an interesting roll call: Describe the meeting you enjoyed most last year and why. We could all

ask ourselves that question. A "bring and buy" sale netted a goodly sum.

At **Waterloo-Warden** the members answered the roll call by naming a discovery or invention that had benefited mankind. Some were insulin, several kinds of electrical tools, X-Ray machines, modern anesthetics, and television. Each member brought 14 cents for St. Valentine's Day for Ways and Means, and wool was distributed for CanSave knitting. The publicity convener held a contest on advertising slogans on products used in most homes and another contest on the language of colours. **Granby Hill's** Roll Call was to bring in cookies or money for fruit for the citizens at Orchard Manor. The Agriculture Convener mentioned that local taxes have tripled, and the Citizenship Convener reported that farms use only about 20 per cent of the energy consumed and the Education Convener said: to make candles last longer, freeze 24 hours before use. The members of **Dewittville** and **Ormstown** served a potluck dinner to the residents of Walshaven Apartments and to those who receive Meals on Wheels in Ormstown-89 sat down to eat and five trays were sent out. The program for the meeting was the showing of slides by Mrs. Wm. Craig. At **Huntingdon**, an interesting report was given on The Little Green Library and some of the books available. The publicity convener of the **Hemmingford** branch showed a poster depicting various WI events that took place during Centennial Year. Agriculture Convener read that a weak tea solution was good for house plants. Publicity Convener reported that she had the address of an individual in western Canada who collected used Christmas cards. Both **Aubrey-Riverfield** and **Franklin Centre** had a Valentine exchange and the latter branch plans to make an afghan for the Tweedsmuir Contest. At **Clarendon**, a letter was read from Mrs. Rabb, Country President,

concerning the ACWW pins — 19 were ordered. The branch was saddened by the death of two life members: Mrs. Harold Hodgins, who had been President of Clarendon twice and had been very active in Pontiac County work. She was County Secretary for many years and was a recipient of an Abbie Pritchard throw a few years ago. Also Mrs. Dwight McDowell, who was very active in the branch.

At **Jerusalem-Bethany**, Mrs. Jean Ivall spoke on holidaying in Florida. Her talk was most appreciated as she had travelled intensively in this state and readily recalled many experiences. At **Dalesville-Louisa** Mrs. G. McGibbon gave an interesting talk on antiques and displayed various articles. The special speaker for the evening meeting of the **Grenville** branch was Mrs. J. Vegeau, who is the regional director for the International Red Cross. Her active life has taken her to Africa, Algeria, Morocco and Senegal. She works at Montreal University and, as collaborator at the Women's Prison, is responsible for the territory between Hemmingford and Fort Coulonge. She said that we Canadians never stop to realize all of the world's goods with which we are blessed. Another of her statements "please try to give a little more of your self, time, and money."

This motto came from **Gore**: Evil thoughts like green apples, upset the system and from **Dunham**, the nicest part about wearing a smile is that one size fits all. I was casting around for a thought for this month — it is such an important time of the year. April seems like a period of beginnings, a time of promise and of getting ready for the busy days ahead that we all feel we want to be a part of it. John L. Audubon, bird lover said "The woods would be very silent if no birds sang there except those who sang best" How true that is!

Gladys C. Nugent
Publicity Convener, QWI



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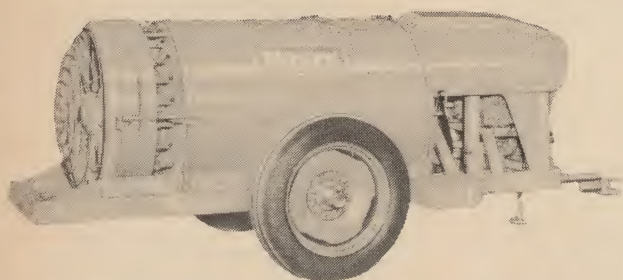
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